DOCKET NO.: MSFT-2732/305554.01
Application No.: 10/782,988
Office Action Dated: February 13, 2007

PATENT
REPLY FILED UNDER EXPEDITED
PROCEDURE PURSUANT TO
37 CFR § 1.116

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1.   (Currently amended) A method for reading a <u>changed</u> data page, said method comprising:

~~making a change to the~~ <u>changing a</u> data page<u>;</u> ~~to generate a~~

<u>generating the</u> changed data page <u>in response to the change;</u>

<u>storing data associated with the change in a transaction log buffer;</u>

marking ~~a durability indicator associated with~~ the <u>changed</u> data page ~~that~~ <u>to</u> indicate[[s]] that the ~~changed data page~~ <u>transaction log buffer</u> has yet to be ~~written~~ <u>flushed</u> to a persistent data store;

~~storing data associated with the change in a transaction log buffer;~~

<u>determining whether the changed data page is marked;</u> and

flushing the transaction log buffer to the persistent data store ~~, based on the durability indicator,~~ prior to the changed data page being read.

2.   (Currently amended) The method of claim 1 further comprising:

unmarking the ~~durability indicator~~ <u>changed data page</u> when the transaction log buffer is flushed.

3.   (Currently amended) The method of claim 2 wherein flushing the transaction log buffer occurs when the ~~durability indicator~~ <u>changed data page</u> is marked, and wherein said method further comprises reading an unmarked data page as part of a read operation that uses data that has been stored in the persistent data store, without first flushing said transaction log buffer.

4.   (Currently amended) The method of claim 1 wherein marking the ~~durability indicator~~ <u>changed data page</u> comprises writing a value of a bit associated with said <u>changed</u> data page.

5.   (Currently amended) The method of claim 4 wherein the bit is stored in said <u>changed</u> data page.

DOCKET NO.: MSFT-2732/305554.01
Application No.: 10/782,988
Office Action Dated: February 13, 2007

PATENT
REPLY FILED UNDER EXPEDITED
PROCEDURE PURSUANT TO
37 CFR § 1.116

6.   (Original) The method of claim 4 wherein the bit is stored in a reference table.

7.   (Currently amended) The method of claim 1 wherein marking the ~~durability indicator~~ <u>changed data page</u> comprises recording, in a reference location associated with said <u>changed</u> data page, a copy of a log sequence number from said transaction log buffer and corresponding to the change to the data page.

8.   (Currently amended) The method of claim 7 wherein said copy of the log sequence number is stored in said <u>changed</u> data page.

9.   (Previously presented) The method of claim 7 wherein said copy of the log sequence number is stored in a reference table.

10.   (Previously presented) The method of claim 7 wherein the copy of the log sequence number is used to identify a transaction in order to cause said transaction to effect the flushing of the transaction log buffer.

11.   (Currently amended) A computer-readable medium having computer-readable instructions for reading a <u>changed</u> data page, said computer-readable instructions comprising instructions for:

  ~~making a change to the~~ <u>changing a</u> data page<u>;</u> ~~to generate a~~

  <u>generating the</u> changed data page <u>in response to the change;</u>

  <u>storing data associated with the change in a transaction log buffer;</u>

  marking ~~a durability indicator associated with~~ the <u>changed</u> data page ~~that~~ <u>to</u> indicate[[s]] that the ~~changed data page~~ <u>transaction log buffer</u> has yet to be ~~written~~ <u>flushed</u> to a persistent data store;

  ~~storing data associated with the change in a transaction log buffer;~~

  <u>determining whether the changed data page is marked;</u> and

  flushing the transaction log buffer to the persistent data store ~~, based on the durability indicator,~~ prior to the changed data page being read by a read operation.

DOCKET NO.: MSFT-2732/305554.01
Application No.: 10/782,988
Office Action Dated: February 13, 2007

PATENT
REPLY FILED UNDER EXPEDITED
PROCEDURE PURSUANT TO
37 CFR § 1.116

12.   (Currently amended) The computer-readable medium of claim 11 further comprising instructions for:

unmarking the ~~durability indicator~~ <u>changed data page</u> when said transaction log buffer is flushed.

13.   (Currently amended) The computer-readable medium of claim 12 wherein flushing the transaction log buffer occurs when the ~~durability indicator~~ <u>changed data page</u> is marked, and wherein a read operation that uses data that has been stored in the persistent data store can read an unmarked data page without first flushing said transaction log buffer.

14.   (Currently amended) The computer-readable medium of claim 11 wherein the instructions for marking the ~~durability indicator~~ <u>changed data page</u> further comprises instructions for changing a value of a bit associated with said <u>changed</u> data page.

15.   (Currently amended) The computer-readable medium of claim 14 further comprising instructions for the bit to be stored in said <u>changed</u> data page.

16.   (Previously presented) The computer-readable medium of claim 14 further comprising instructions for the bit to be stored in a reference table.

17.   (Currently amended) The computer-readable medium of claim 11 wherein the instructions for marking the ~~durability indicator~~ <u>changed data page</u> further comprises instructions for recording a copy of a log sequence number, from said transaction log buffer and corresponding to the change to the data page, in a reference location associated with said <u>changed</u> data page.

18.   (Currently amended) The computer-readable medium of claim 17 further comprising instructions for said copy of the log sequence number to be stored in said <u>changed</u> data page.

DOCKET NO.: MSFT-2732/305554.01
Application No.: 10/782,988
Office Action Dated: February 13, 2007

PATENT
REPLY FILED UNDER EXPEDITED
PROCEDURE PURSUANT TO
37 CFR § 1.116

19.   (Previously presented) The computer-readable medium of claim 17 further comprising instructions for said copy of the log sequence number to be stored in a reference table.

20.   (Previously presented) The computer-readable medium of claim 17 further comprising instructions for the copy of the log sequence number to be used to identify a transaction in order to cause said transaction to effect the flushing of the transaction log buffer.

21.   (Currently amended) A data page reading system, said system comprising:
        a plurality of data pages;
        a plurality of transaction logs associated with each of said plurality of data pages;
        a first subsystem that ~~makes a~~ changes ~~to~~ one of the plurality of data pages, ~~to~~ generates a changed data page in response to the change, and marks ~~a durability indicator associated with~~ the changed data page ~~that~~ to indicate[[s]] that the ~~changed data page~~ associated transaction log has yet to be ~~written~~ flushed to a persistent data store, wherein data associated with the change ~~being~~ is stored in the associated transaction log;
        a second subsystem that determines whether the changed data page is marked; and
        a ~~durability~~ third subsystem that flushes the associated transaction log to [[a]] the persistent data store ~~, based on the durability indicator,~~ prior to the changed data page being read by a read operation.

22.   (Canceled)

23.   (Currently amended) The system of claim 21 further comprising a ~~read~~ fourth subsystem ~~whereby~~ that performs said read operation, ~~when executing the process of reading said data page,~~ wherein the second subsystem checks whether said ~~durability indicator~~ changed data page has been marked and, (a) if so, the third subsystem flushes [[a]] the transaction log associated with said changed data page[[,]] and unmarks said ~~durability indicator~~ changed data page, and the fourth subsystem reads a set of data from said changed

DOCKET NO.: MSFT-2732/305554.01
Application No.: 10/782,988
Office Action Dated: February 13, 2007

PATENT
REPLY FILED UNDER EXPEDITED
PROCEDURE PURSUANT TO
37 CFR § 1.116

data page, and, (b) if not, <u>the fourth subsystem</u> reads the set of data from said data page

without first flushing said transaction log associated with said <u>changed</u> data page.

24.   (Currently amended) The system of claim 23 wherein the <u>plurality of</u> data page<u>s each</u>

comprise[[s]] a bit ~~associated with said data page~~ that is changed when said <u>respective</u> data

page is modified by a transaction.

25.   (Currently amended) The system of claim 24 wherein ~~the~~ <u>each</u> bit is stored in said

<u>respective</u> data page.

26.   (Currently amended) The system of claim 24 wherein ~~the~~ <u>each</u> bit is stored in a

reference table.

27.   (Currently amended) The system of claim 23 further comprising a ~~marking~~ <u>fifth</u>

subsystem which records a copy of a log sequence number, from said transaction log and

corresponding to said modification of said data page by a transaction, in a reference location

associated with said data page when said ~~durability indicator~~ <u>changed data page</u> is marked.

28.   (Currently amended) The system of claim 27 wherein ~~marking~~ <u>the fifth</u> subsystem

uses the copy of the log sequence number to identify the transaction in order to cause said

transaction to effect flushing of said transaction log associated with said <u>changed</u> data page

and unmarking said ~~durability indicator~~ <u>changed data page</u> when said ~~data page~~ <u>associated</u>

<u>transaction log</u> is flushed.